Digitized by the Internet Archive
in 2016

https://archive.org/details/b22009693

REMARKS

ILLUSTRATIVE OF THE SCOPE AND INFLUENCE

OF THE

PHILOSOPHICAL WRITINGS

OF

LORD BACON.

BY

MACVEY NAPIER, Esq. F.R.S. Lond. & Edin. & F.A.S. Edin.

FROM THE

TRANSACTIONS OF THE ROYAL SOCIETY OF EDINBURGH.

[*Read February* 16. 1818.]

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

REMARKS

ILLUSTRATIVE OF THE SCOPE AND INFLUENCE

OF THE

PHILOSOPHICAL WRITINGS

OF

LORD BACON.

THE obligations of Experimental Physics to the labours of Lord Bacon, have been largely acknowledged by the generality of those who have treated of the History of Modern Science; insomuch, that the title of *Father of Experimental Philosophy* has been oftener conferred upon him than upon any other of its benefactors. There are some, however, who seem to think, that there is no good ground for honouring him with this title, either on account of the merits or the effects of his writings. They do not indeed deny, that his views as to the proper objects and method of philosophizing were extensive and just; but they contend, that he had no *peculiar* merit in having stated these views; that all that he taught was virtually and more effectually taught by the discoveries of some of his contemporaries; and that, in fact, there are no traces of his agency to be found in the discoveries that followed *. These opinions, though they are to be met with in respect-

A able

* "Atqui Verulamius ille, qui Germanæ Philosophiæ Restitutor, quin etiam, si Superis placet, Parens a Brukero aliisque habetur, quid aliud in Anglia præstitit,

able books, and in the conversation of intelligent men, seem to involve no small portion both of error and misconception. It cannot be denied, indeed, that at the time when Bacon wrote, there was a growing tendency to abandon the ancient systems, and that some successful essays had been made in that course of inquiry which he recommended; but, on the other hand, it appears to me equally clear, that his labours for the advancement of Science were of such peculiar importance, and attended with such extensive effects, as to entitle him to a pre-eminent station among its early reformers and promoters. It is the object of this paper to offer some remarks, and to collect some proofs, in support of these views; but, as much has been already written in illustration of the merits, and but little in illustration of the *effects* produced by his philosophical writings, I shall content myself, at present, with a slight indication of their general scope, and shall devote the greater part of my paper to the proofs of their influence. Upon the latter point, indeed, there seems to exist more of doubt and of misapprehension than upon any other connected with his philosophy*.

In

---

tit, nisi, ut, qua ratione philosophari deberemus, eo tempore admoneret, quo Galilæus eadem ipsa ratione philosophari jam in Italia cœperat, ac cæteris, ut idem facerent, non modo verbis, verum et rebus ipsis gravissimus auctor esset?"—Fabroni, *Vitæ Italorum doctrina excellentium qui sæculis* xvii. *et* xviii. *floruerunt*, vol. i. p. 223.

——"C'est Galilee," says a French Philosopher of the present day, "qui a montré l'art de l'interroger par l'expérience. On a souvent attribué cette gloire à Bacon; mais ceux qui lui en font honneur, ont été (à notre avis) un peu prodigues d'un bien qu'il ne leur appartenait peut-être pas de dispenser."—*Biographie Universelle*, Tom. xvi. p. 329, Art. Galileo; written by M. Biot.

* There cannot be a stronger proof of the misapprehensions alluded to, than what is furnished in the following passage, of the interesting article above mentioned.

In order to clear the way for this inquiry, I shall begin with a few remarks on a late estimate of Bacon's Philosophy, evidently intended, not merely to depreciate, but to vilify it; insomuch, that it stands remarkably at variance with almost all that has been hitherto published on that subject. The estimate alluded to is the more worthy of notice, that it has obtained a place in a Literary Journal of great respectability, and which is supposed by many to speak the sentiments of the English Universities in matters of philosophy.

It is pretty well known, I presume, that Bacon's writings have been recently commented upon by two of our most eminent philosophers; by the one, in reference to their connection with the Philosophy of the Mind *; and by the other, in reference to their more apparent object, the explaining the method by which to extend our knowledge of the Material World †. Both of them represent Bacon as the first who clearly and fully pointed out the legitimate rules and ends of philosophical inquiry;

---

mentioned. "Si Bacon a eu tant de part aux découvertes qui se sont faites après lui dans les sciences, qu'on nous montre donc un seul fait, un seul résultat de son invention, qui soit de quelque utilité aujourd'hui: ou, si ses principes généraux sont tellement feconds, qu'ils aient pu, comme on l'assure, lui faire pressentir un grand nombre de decouvertes modernes, il est présumable qu'on n' a pas encore épuisé tout ce que contient son Livre; et dans ce cas, ceux qui disent que nous lui devons tant de choses, devraient essayer d'en tirer d'avance quelques-unes des découvertes dont la methode de Galilee nous enrichit tous les jours."—*Biog. Universelle*, in loc. cit.

* See Mr Stewart's *Dissertation on the Progress of Metaphysical, Ethical, and Political Philosophy*, prefixed to the *Supplement to the Encyclopædia Britannica.*

† See Professor Playfair's *Dissertation on the Progress of Mathematical and Physical Science*, prefixed to the same work.

quiry; and both consider his writings as fixing a new and important era in the history of Modern Science. The observations made by the former upon these points, have been examined at considerable length in an able article of the Journal referred to; and the following passage contains the sum of what is there advanced in regard to the general scope and character of Bacon's Philosophy. "The topic on which Mr "Stewart chiefly dwells, while panegyrizing the Philosophy "of Bacon, is the respect which it pays to the *limits*, *the laws*, "*and resources of the human understanding*; and this is sure- "ly the most extraordinary topic of any which he has select- "ed. There is *scarcely a page* in the *Novum Organum*, that "does not furnish a contradiction to it.—So little, indeed, "can Bacon be considered as having risen in any great de- "gree above the age in which he lived, with respect to his "views as to the proper aim of philosophy, or the proper "limits of the human understanding, that he even goes "so far as to give us formal receipts for the making of "gold, and performing other prodigies, which he tells us he "judges very possible. With the exception of the disciples of "Raymond Lully and Jordano Bruno, *the extravagant spe- "culations in which* Bacon *wished to embark philosophy, had "been long abandoned by sober inquirers* *."

It

---

* *Quarterly Review*, No xxxiii. p. 50.—The writer of this article seems to have been anxious to find some great names to countenance what he has advanced in regard to the very inferior merits of Bacon's philosophical writings. What his success has been in this endeavour, the following extract will shew.

"I remember, said Sir Joshua Reynolds, that Mr Burke, speaking of Bacon's *Essays*, said, he thought them the best of his works. Dr Johnson was of opinion, that their excellence and their value consisted in their being observations of a strong mind operating upon life; and in consequence you find there

It is to be wished, that this writer had explained to us, to what delusion it has been owing, that so many enlightened persons have, for more than a century and a half, concurred in extolling Bacon, for his endeavours to withdraw philosophy from "extravagant speculation," and to give it a direction and a method, calculated to improve the condition, as well as the knowledge, of mankind. Have they *all* been in error, and must Bacon be branded with the imputation of ignorance of the business of philosophy, and the limits of the understanding, merely because he has speculated upon the possibility of making gold? Is this circumstance enough to establish an affinity between the general aims of his philosophy and the extravagant pursuits of the Alchymists? A very few words will suffice upon this point.

---

there what you seldom find in other works."—*Account of Sir Joshua Reynolds*, prefixed to *Malone's* edition of his *Discourses*.

"We are glad," the Reviewer adds, "to be able to defend our opinions concerning the inferior merits of Bacon's philosophical writings, compared with his other works, from the charge of singularity or presumption, by sheltering ourselves under the authority of such names as Burke and Johnson."

It is very observable, that, so far as Dr Johnson's authority is concerned, he does not appear, in the conversation referred to, to have made any *comparison* whatever between Bacon's *Essays* and his other works: he only made a remark descriptive of the *Essays*, in which every one who has perused them will readily concur; and besides, the Reviewer ought to have known, that Johnson has, in one of his papers in the *Adventurer*, represented Bacon as the only Modern worthy of being compared, in a philosophical point of view, with Newton; thereby showing, that he must have held the philosophical works of the former in the highest possible degree of estimation. Great as the excellence of the *Essays* undoubtedly is, it is difficult to believe, that such a man as Burke could deliberately rate them as of higher merit than the *De Augmentis Scientiarum* and *Novum Organum*. There is need of some better evidence, surely, that he had formed a deliberate opinion to that effect, than what is furnished by the scrap of conversation which forms the Reviewer's only document of proof.

There can be no doubt, that Bacon did believe in the possibility of discovering the means of converting other substances into gold; a belief, which was far from being so completely abandoned by all "sober inquirers," as this writer imagines; for it was entertained by Boyle, and some other experimentalists, and not greatly discouraged even by Newton, at a period when experimental philosophy was much farther advanced *. There was no man of his day more thoroughly apprised than Bacon was, of the follies of the Alchymists, or who has mentioned them in terms of stronger ridicule and reprobation †. He nowhere holds out the making of gold as a prime object of philosophical inquiry; on the contrary, he pointedly censures the Alchymists, with whom he has been so absurdly classed, for directing their main views to such an object ‡. The belief which he entertained as to the possibility of making gold, had a very different foundation from that upon which it rested among this fantastical fraternity. With him, the belief in question formed part of his general belief, that the *essences* of all material substances were capable of being discovered by the inductive process. It was a belief which flowed from his lofty notions of the yet untried resources of experimental science. There was then no sufficient stock of experience to authorise any one to lay it down as an established principle, that the knowledge of these essences is placed

* There is a curious letter upon this subject from Newton to Mr Oldenburg, Secretary of the Royal Society, printed in the account of Boyle, in the *Historical Dictionary*. His remarks apply wholly to a particular process of transmutation, and not to the *impossibility* of the thing itself. See *General Historical and Critical Dictionary*, vol. iii. p. 558.

† See *Novum Organum*, Lib. i. Aph. 85. 87.

‡ Ibid. Lib. i. Aph. 70.

placed beyond the reach of scientific discovery. It is not very surprising, therefore, that Bacon should believe, that a series of skilfully conducted experiments might ultimately lead to the detection of the nature or essence of gold; and that having thus discovered its constituent nature, it would then be possible to superinduce it upon any other substance. There is nothing in all this that any way impeaches his respect to the "laws and limits of the human understanding." He recommended no inquiry upon any other principles than those of *Induction;* and he proposed no object to philosophy, which any thing but experience could shew to be unattainable.

But we are farther told, that there is "scarcely a page in "the *Novum Organum*" which does not afford proofs of Bacon's ignorance of the laws and limits of the understanding; and that his miscellaneous philosophical pieces seem to have been written in express contempt of them *. Had this writer contented himself with stating, that there are many things in Bacon's miscellaneous pieces, which show that he was not exempt from credulity,—that his understanding, resplendent as it was, bore some stains of the scurf and scum of an ignorant age; or had he only stated that Bacon's metaphysical notions are sometimes vague and unsound, and his use of language fanciful and uncertain, his observations might have been allowed to pass unnoticed, as neither new nor objectionable. But when he goes so far as to charge the *Novum Organum* as every where manifesting a total ignorance of the fundamental conditions of philosophical reasoning, the only respectful conclusion, I must say, that can be adopted in regard to such an assertion

* *Quarterly Review*, No. xxxiii. p. 50.

tion is, that it has proceeded from a very imperfect acquaintance with the work in question. For my own part, I confess myself wholly unable to conceive, how any man of ordinary judgment could read the *Novum Organum* with ordinary attention, without carrying away an impression directly the reverse of that of Bacon's ignorance and disregard of the laws and limits of the human understanding. The first sentence of the work contains an emphatic declaration of homage to these very laws: *Homo Naturæ minister et interpres, tantum facit et intelligit, quantum, de Naturæ ordine, re vel mente observaverit; nec amplius scit, aut potest.* The grand lesson which it every where inculcates is, that all false philosophy had sprung from the too high notions hitherto entertained, of the powers of the mind; these notions having led to the disregard or contempt of the only means by which true knowledge can be obtained. *Causa vero, et radix, fere omnium malorum in scientia ea una est, quod dum mentis humanæ vires falso miramur et extollimus, vera ejus auxilia non quæramus.* Bacon saw more clearly than any preceding inquirer, the folly of supposing the mind capable of explaining the constitution of Nature by means of principles of its own invention, and reasonings *a priori;* and his main aim in the *Novum Organum* was, to withdraw philosophy from such airy speculations, and to employ it in a way more suitable to its purposes, and the limited nature of our faculties. Employed in this way, that, namely, of inductive inquiry, he showed that philosophy would greatly extend the compass of our knowledge, and multiply the instruments of our power. It is not, therefore, without good reason, that Mr Stewart panegyrizes the author of the *Novum Organum*, for his knowledge of "the laws, limits and resources of the human understanding," and for the general soundness of his views as to the ends and rules of philosophical investigation.

The

The truth is, that this writer is, after all, constrained to make an admission, which of itself sufficiently proves the groundlessness of his general censure of Bacon's philosophy. "That the rules of investigation which it lays down, "*are wise and salutary with reference to physics*, we are "happy," says he, "to admit *." Now, the *Novum Organum* is almost wholly occupied with the exposition and illustration of these very rules; and yet it is branded by this writer with the imputation of manifesting disrespect "in "every page" to the laws and limits of the understanding, and a total ignorance of the purposes of science. It would prove a rather perplexing task, I should imagine, to show how any one could methodize a set of "wise and sa-"lutary rules of investigation with reference to physics," who, yet, had no sound views of the nature and objects of philosophical inquiry. There must either, in short, be something in the nature of *physics* to take that great branch of knowledge out of the general category of philosophy, or it must be absurd to say, that Bacon could unfold the true principles of physical investigation, he being at the same time ignorant of the nature and aim of genuine science. His rules with respect to physical inquiry were "wise and salutary," precisely because they were conformable to the laws and limits of the human understanding; because "he saw well," to use his own words, "that the supposition of the too great suffi-"ciency of man's mind had lost the means thereof †."

It is besides to be observed, that there is no ground whatever for the limitation of the wisdom and utility of Bacon's logical precepts to the physical sciences alone. He who admits that

* *Quarterly Review*, No. xxxiii. p. 52.

† *Filum Labyrinthi*, Works, vol. i. p. 400. 4to edit.

they are " wise and salutary with reference to physics," must go a step farther, and admit that they are also wise and salutary with reference to inquiries regarding the mind. The object of philosophy, and the principles of philosophizing are the same, whether the investigation relates to the laws of matter or the laws of mind; and thus the logic of the *Novum Organum* cannot be useful with reference to the one, without having the same character with reference to the other. It is upon this ground that Bacon himself represents his logic as equally applicable to the advancement of the moral and metaphysical as of the physical sciences. " Atque quemadmodum vulgaris Lo-
" gica, quæ regit res per *Syllogismum*, non tantum ad naturales,
" sed ad *omnes* scientias pertinet; ita et nostra, quæ procedit
" per *Inductionem*, omnia complectitur *."

In adverting to the question as to the *influence* of Bacon's philosophical writings upon the subsequent progress of physical science, this writer observes, that it presents a " point
" as to which it is very difficult to form an explicit opi-
" nion. But this," says he, " is sufficiently clear, that if Ba-
" con is to be allowed any considerable share in the honours
" which modern experimentalists have acquired, he may, in
" many respects, be compared to the husbandman in Æsop's
" fable; who, when he died, told his sons that he had left
" them gold buried under ground in his vineyard; and they
" digged all over the ground, and yet they found none; but by
" reason of their stirring and digging the mould about the
" roots of their vines, they had a great vintage the following
" year." It would, if I do not mistake the matter, be as difficult to explain, how this simile could assist any one to form a correct opinion upon the point in question, as to explain how Bacon

* *Novum Organum*, Lib. i. Aph 127.

Bacon could deliver a wise system of rules for the advancement of physics, without having any just notions of the true nature of philosophical inquiry. The object to which Bacon directed the attention of his followers, was the very object he was desirous they should accomplish,—the regeneration of philosophy by means of a well-regulated use of observation and experiment. The benefits, if any, which accrued to mankind from his directions, were obtained precisely in the way, and were precisely of the kind, which he pointed out and promised. Thus, the case of Æsop's husbandman is so far from furnishing an illustration of Bacon's connection with the advancement of physics, that there is evidently no ground whatever for such a parallel; and the writer who institutes it only proves, that he has altogether mistaken the true bearings of the question. But, before proceeding to state the proofs of this connection, it will be proper to show somewhat more fully, that Bacon's philosophical merit was of the highest kind, and that it was wholly unshared by any other person.

Bacon's grand distinction, then, considered as an improver of physics, lies in this, that he was the first who clearly and fully pointed out the rules and safeguards of right reasoning in physical inquiries. Many other philosophers, both ancient and modern, had referred to observation and experiment in a cursory way, as furnishing the materials of physical knowledge; but no one, before him, had attempted to systematize the true method of discovery; or to prove, that the *Inductive*, is the *only* method by which the genuine office of philosophy can be exercised, and its genuine ends accomplished. It has sometimes been stated, that Galileo was, at least in an equal degree with Bacon, the father of the Inductive Logic; but it would be more correct to say, that his discoveries

discoveries furnished some fortunate illustrations of its principles. To explain these principles was no object of his; nor does he manifest any great anxiety to recommend their adoption, with a view to the general improvement of science. The Aristotelian disputant, in his celebrated *Dialogues*, is made frequently to appeal to observation and experiment; but the interlocutor through whom GALILEO himself speaks, nowhere takes occasion to distinguish between the flimsy inductions of the Stagyrite, in regard to the subjects in dispute, and those which he himself had instituted; or to hint at the very different complexion which philosophy must assume, according as the one kind or the other is resorted to. Thus, though GALILEO was a great discoverer, it cannot be said that he had any distinction from having taught the principles of the art by which discoveries are made. That distinction belongs wholly to BACON. "No man," says one of the most eminent of our earlier philosophers, "except the incomparable VERULAM, has "had any thoughts of an art for directing the mind in physi- "cal inquiries *."

Some late writers have, however, advanced an opinion, that this distinction does not belong exclusively to any of the moderns †. "It is an error," we are told, "to represent BACON "*as professing his principle of induction to be a discovery.* "*The method of induction, which is the art of discovery, was* "*so far from being unknown to* ARISTOTLE, *that it was often* "*faithfully pursued by that great observer.* What BACON aim- "ed at, he accomplished; which was, not to discover new "principles, but to excite a new spirit, and to render observa- "tion

* HOOKE.—*Posthumous Works*, p. 6.

† See some admirable remarks on this subject, in the *second* volume of Mr STEWART'S *Philosophy of the Mind*, Chap. 4. sect. 2.—*On the induction of* ARISTOTLE *compared with that of* BACON.

"tion and experiment the predominant character of philoso-
" phy *." It is with considerable diffidence that I dissent from any statement made on the subject of Bacon's philosophy by the author of the splendid and instructive essay here referred to. But I must be permitted to express some surprise, that *he* should represent Bacon's aims and labours as having been *professedly* limited to the *revival* of a method of discovery which had been well known to, and successfully practised by Aristotle. Nothing can be more certain, than that Bacon rests the whole hopes of his philosophy, upon the *novelty* of his logical precepts †; and that he uniformly represents the ancient philosophers, particularly Aristotle, as having been wholly regardless of the inductive method in their physical inquiries. Bacon does not, indeed, say, that the ancient philosophers never employed themselves in observing Nature; but he maintains, that there is a wide difference between observation as it was employed by them, and the art of observing for the purposes of philosophical discovery. " Alia enim est ratio
" naturalis historiæ, quæ propter se confecta est; alia ejus, quæ
" collecta est, ad informandum intellectum in ordine ad con-
" dendam philosophiam ‡." Bacon does not accuse Aristotle of having always reasoned without any reference to facts; but he contends, that Aristotle has nowhere stated the rules for aiding and regulating the understanding in the process of discovery by means of facts; and that the use which he has made of them in his philosophy, is very different from the use which is made of them in the philosophy of induction. " Ille
" enim *prius decreverat*, neque experientiam ad constituenda

 " decreta

---

* *Edinburgh Review*, No. liii. p. 186.

† *Novum Organ.* Lib. i. Aph. 82. 95. 97. 125.

‡ Ibid. Lib. i. Aph. 98.

" decreta et axiomata rite consuluit; sed postquam pro arbi-
" trio suo decrevisset, experientiam ad sua placita tortam cir-
" cumducit, et captivam *." It should always be recollected, that Bacon's call was not merely for observation and experiment; but for observation and experiment conducted according to certain forms and rules; which forms and rules were first delineated by him, and constitute the body of the Inductive Logic. There may be nothing in this logic that can be called a *discovery* in the strict sense of the word; but the statement of its precepts, was certainly a grand and important step towards the advancement of genuine science.

It would require a complete analysis of the *Novum Organum* to furnish an adequate idea of the value of Bacon's services in this important department of philosophy; but the *fundamental* rules of his method may be comprehended in a few sentences. They seem all to be founded upon the following principles: first, That it is the business of philosophy to discover the laws or causes that operate in Nature, in order thereby to explain appearances, and produce new effects †: next, That we are incapable of discovering these laws or causes in any other way than by attending to the circumstances in which they operate: and, lastly, That the mind is naturally disposed to run into general conclusions, and to form systems, before

---

* *Novum Organum*, Lib. i. Aph. 63.

† *Novum Organ.* Lib. i. Aph. 117. Throughout the whole of the first book, the object of science is represented to be the discovery of *Axioms;* by which term Bacon evidently means those general laws or truths which form the basis of our physical reasonings. Newton, as Mr Stewart observes, has, after Bacon's example, applied the term *Axiom* to the laws of motion, and to the statement of certain general truths in Catoptrics and Dioptrics. See *Philosophy of the Mind*, vol. ii. Chap. 4. They who are engaged in the study of the *Novum Organum*, will derive much valuable information and assistance from the perusal of this part of Mr Stewart's work.

fore having made all the inquiries necessary to truth. In conformity with these principles, he shows, that all sound philosophy must proceed *from* facts; that the facts in every case must be carefully collected and compared; and that in all our reasonings about them, the natural tendency of the mind to generalize must be carefully repressed. The *spurious* method of induction is that which proceeds suddenly from particulars scantily collected or ill examined to the most general conclusions. The *true* method is that which lays a wide basis in observations and experiments, and which generalizes slowly; advancing gradually from particulars to generals, from what is less general to what is more general, till the inquiry ends in truths that appear to be universal *.

Nothing could be more encouraging or animating, than Bacon's recommendations of this plan of inquiry. Though he held that the noblest end of philosophy is the discovery of truth †, he taught that there is a correspondence between this and another end, also of great dignity,—the improvement of the outward accommodations of human life. He showed, that, when the principles of science should really be derived from the knowledge of Nature, their discovery would prove beneficial to man, as well in respect to the increase of his *power* as of his *knowledge*; because the principles so discovered would lead to new inventions in the useful arts, and to new rules for the improvement of all the operative parts of knowledge. He endeavoured to stimulate the spirit of inquiry, by representing the field of scientific discovery, as yet almost wholly uncultivated

---

* *Nov. Organ.* Lib. i. Aph. 100, 101, 102, 103, 104, 105.

† Ibid. Aph. 124. 129. He takes some pains here and elsewhere to guard against the supposition that he valued science only as it was calculated to augment the outward accommodations of life.

tivated, and by assurances that it only required to be cultivated with attention to his rules, in order to yield an endless increase of knowledge and of inventions. "Let it be believed," says he, "and appeal thereof made to time, *with renunciation, never-*
"*theless, to all the vain and abusing promises of the Alchy-*
"*mists, and such like credulous and fantastical sects*, that the "new found world of land was not greater addition to the old, "than there remaineth at this day a world of *Inventions* and "*Sciences* unknown, having respect to those that are known, "with this difference, that the ancient regions of knowledge "will seem as barbarous compared to the new, as the new re-"gions of people seem barbarous compared to many of the "old *." It is in these confident anticipations of the future triumphs of science, so often repeated as encouragements to its faithful prosecution, that we more particularly perceive the grandeur and reach of his views. His predictions of improvement were not the vague or casual surmises of a happy enthusiasm; they were evidently grounded upon an enlightened conviction, that the business of philosophy had hitherto been mistaken, and that her labours would prosper, when they should be employed with constancy and skill upon their legitimate objects.

Is it not unreasonable to doubt the utility of a system of logical instructions, in which the true art of discovery was, for the first time, explained? These instructions were offered at a period in every respect opportune. There was a growing disposition to revolt against the Schools, and a wise leader was wanted to raise the true standard of reform, and to give a salutary direction to the pursuits of those who should emancipate themselves from their authority. The improvement

* *Of the Interpretation of Nature*, Chap. i.—Works, vol. i. p. 376. 4to edit.

ment of some branches of physics was already in part begun; but there was no general agreement as to the rules of inquiry. The truths which Bacon taught are now, it is true, known, and their authority acknowledged by all; but this was far from being the case in the early part of the seventeenth century. One of the most intelligent of his friends, Sir Thomas Bodley, to whose judgment he submitted an early sketch of his plan, appears to have been wholly unable to distinguish between the loose procedure of the Empirics and that regulated procedure which it recommends. "As for that," says he, "which you inculcate of a knowledge more excellent "than now is among us, which experience might produce, "if we would but essay to extract it out of Nature by particu- "lar probations; it cannot, in reason, be otherwise thought, "but that *there are infinite numbers which embrace the course* "*that you propose, with all the diligence and care that ability can* "*perform.* I stand well assured," he concludes, "that for the "tenor and subject of your main discourse, you will not be "able to impannel a substantial jury in any university, that "will give up a verdict to acquit you of error*." But that which places the importance of Bacon's logical instructions in the strongest light, is the fact, that one of the most celebrated of his contemporaries, who also professed himself a reformer of philosophy, employed the better part of his life, in teaching doctrines as diametrically opposite in principle as in tendency. This was Descartes. "Never," says an eloquent philosopher, "did two men, gifted with such genius, recommend paths of in- "quiry so widely different. Descartes aspired to deduce an ex- "planation of the whole system of things by reasoning *a priori*

* *Sir Thomas Bodley's Letter to Sir Francis Bacon about his* COGITATA ET VISA.—Bacon's Works, vol. iii. p. 242, 243, 244.

" upon assumed principles: BACON, on the contrary, held, that " it was necessary to observe Nature thoroughly before at- " tempting to explain her ways; that we must ascend to prin- " ciples through the medium of facts; and that our conclu- " sions must be warranted by what we observe. DESCARTES " reasoned about the World, as if the laws which govern it had " not yet been established, as if every thing were still to " create. BACON considered it as a vast edifice, which it was " necessary to view in all directions, to explore through all its " recesses and windings, before any conjecture even, could be " safely formed as to the principles of its construction, or " the foundations on which it rests. Thus, the philosophy of " BACON, by recommending the careful observation of Nature, " still continues to be followed, whilst that of DESCARTES, " whose essence lay in hypothesis, has wholly disappeared *" Nor was DESCARTES, I may add, ignorant of what BACON had taught as to the principles of philosophizing. It appears, on the contrary, from his correspondence, that he was well acquainted with BACON's writings; and, in one of his letters, he seems to admit, that provided the Experimental were the true Method, there was nothing that could be added to increase the utility of BACON's precepts †.

Having made these remarks, with a view to point out, in a general way, the nature and importance of those helps and encouragements which BACON's writings furnished to physical inquiry, I am next to endeavour to show, that the subsequent progress of physical knowledge was greatly accelerated by the effects which they produced. And here I beg to observe, that

* BAILLY.—*Histoire de l'Astronomie Moderne*, tom. ii. liv. 4. § 2.

† *Lettres de* M. DESCARTES, tom. iv. p. 201, Paris edit. 1724.

that I have no argument with those who hold, that the reformation of philosophy by the adoption of the Inductive Method would have taken place in time, though Bacon had never written; any more than with those who hold, that physical science owes nothing to him, on the score of any discovery of importance made by himself, or deduced by others from his suggestions. I have before stated, that this reformation was already in progress, and that the Inductive Method had been happily *exemplified* in the discoveries of some of his contemporaries. The proposition here maintained is, that Bacon did *more* to forward its general adoption than any other person; and this,—because his writings contributed more than the labours of any other individual, to complete the abandonment of the scholastic methods and systems,—to generate a relish for experimental inquiries,—and to imbue the minds of the ingenious with the views and principles requisite to conduct these inquiries with success. The way to prove that Bacon's writings were powerful agents in the advancement of physical knowledge, is to prove that they produced these effects; and the proof that such effects were actually produced by them, must necessarily be derived from the testimony of those who early experienced, or became otherwise acquainted with their operation.

The reputation which Bacon had acquired from his *Essays*, a work early translated into various foreign languages; his splendid talents as an orator, and his prominent place in public life,—were circumstances strongly calculated to attract the curiosity of the learned world to his Philosophical Writings; and from some of which, he derived advantages in regard to their circulation, not possessed in that age by ordinary men. These writings accordingly appear to have been early read by the learned at home, and early transmitted to the learned abroad; and

it

it farther appears, that the important truths which they disclosed did not remain long unperceived, or barren of consequences. "Dr Collins, Provost of King's College, Cambridge, "a man of no vulgar wit, affirmed unto me," says Bacon's Chaplain, Dr Rawley, "that after reading the *Advancement of* "*Learning*, he found himself in a case to begin his studies "anew, and that he had lost all the time of his studying be- "fore *." Of his more recondite work, his distinguished contemporary Ben Johnson speaks as follows: "The *Novum* "*Organum* is not penetrated or understood by superficial men, "who cannot get beyond *Nominals*, *but it really openeth all* "*defects of knowledge whatsoever*; and is a book

"Qui longum noto Scriptori proroget ævum *."

Sir Henry Wotton, another of the most eminent men of that day, thus warmly expresses his opinion of its merits: "I have "received," says he, in a letter to Bacon, written from Ger- "many, three copies of that work, wherewith your Lordship "hath done *a great and everlasting benefit to all the children of* "*Nature*, and to Nature herself in her utmost extent and lati- "tude, who never before had so true an Interpreter, or so inward "a Secretary of her Cabinet †." In this letter, Sir Henry gives an interesting account of an accidental meeting which he had lately had with the celebrated Kepler, in Upper Austria; to whom, he adds, he was about to send one of his copies of the *Novum Organum*, for the honour of England. It is not surprising, that a writer who entertained such sentiments in regard to the importance

* *Life of Bacon*, prefixed to Rawley's *Resuscitatio, or bringing to light several pieces of the Works of Lord Bacon.*

† Ben Jonson's *Discoveries.*—*Works*, vol. vii. p. 100. Whalley's edition.

‡ *Reliquiæ Wottonianæ*, p. 299. 3d edition.

importance of Bacon's Philosophy, should have been led to predict the speedy downfal of that of the Schools. "Sir Henry "Wotton," says Dr Beale, in a letter to Mr Boyle, written about forty years after this period, "would often please him- "self in lashing the Schoolmen; and would often declare it "as a serious prediction, that in *this age* their reputation "would yield to more solid philosophy." Dr Beale adds, that he had himself been weaned from the errors of the Schools, by the early perusal of Bacon's philosophical writings *.

In a letter to King James, written about the period of the publication of the *Novum Organum*, Bacon states, that the *Advancement of Learning*, had been very favourably received in the Universities; and he thence draws the conclusion, that the *Novum Organum* would also be acceptable to them; because, says he, "it is only the same argument "sunk deeper †." In an address presented to him by the University of Oxford, in the year 1623, he is represented as a "mighty Hercules, who had by his own hand "greatly advanced those pillars in the learned world, which, "by the rest of the world, were supposed immoveable ‡;" and this piece of homage, it is to be observed, was offered at a time when all motives to interested adulation had been done away by his lamentable fall. These facts seem to evince, that Bacon's writings had early made a strong impression, even in quarters where favourable effects were not likely to be speedily produced; and accordingly, we are informed by

* Boyle's *Works*, vol. vi. p. 355.

† Bacon's *Works*, vol. iii. p. 584.

‡ Tennison's *Baconiana, or certain Genuine Remains of* Sir Francis Bacon, p. 206.

Bishop SPRAT, that when some of those ingenious men who afterwards assisted in forming the *Royal Society*, began, about the end of the Civil War, to establish a weekly meeting at Oxford for philosophical discussion, they found, that the new spirit of "free inquiry" had already made considerable progress among the members of the University *.

When one of BACON's friends asked him, Whether he thought the Churchmen likely to oppose his intended reformation of philosophy, his answer was—"I have no occasion to meet "them in my way, except it be, as they will needs confede-"rate with ARISTOTLE, who, you know, is intemperately "magnified by the School-Divines †." We are told by OSBORN, a contemporary observer, that the "School-Divines" did endeavour to cry down his philosophical writings, by representing them as favouring *atheism* ‡. This was their usual mode of warfare when the established tenets of the Schools were attacked by any formidable opponent. The Aristotelians of all descriptions,

---

* SPRAT's *History of the Royal Society*, p. 53; also p. 328.——This spirit appears to have made still greater progress at Cambridge. GLANVILL, who became a student of Exeter College, Oxford, in 1652, "lamented," says ANTHONY WOOD, "that his friends did not send him to Cambridge; because, he used to say, that the *new philosophy, and the art of philosophizing*, were more cultivated there, than here at Oxford."—*Athen Oxon.* vol. ii. p. 662.——"After the way of free-thinking," says BAKER, "had been laid open by Lord BACON, *it was soon after greedily followed.*" See his *Reflections on Learning*. This work was first published in 1699. The author, who was a Fellow of St John's College, Cambridge, was deeply read in the history of that University. His extensive collections upon that subject are deposited in the British Museum.

† BACON's Letters to Sir *TOBY MATTHEW*, in his *Works*, vol. iii. p. 247, 257.

‡ Introduction to OSBORN's *Miscellany of Essays, Paradoxes, and Discourses.*

descriptions, appear to have early manifested a decided hostility to his philosophy; and their criticisms are sometimes expressed in a way which plainly testifies that it had made considerable progress. The examination of his *Sylva Sylvarum*, by ALEXANDER ROSS, now much better known by BUTLER's sarcastic allusion in the poem of *Hudibras*, than by any of his own multifarious productions, furnishes a curious example. It was published in the year 1652, that is, about twenty-five years after BACON's death. "I have," says he, "cursorily run over my "Lord BACON's *New Philosophy*, and find that philosophy is "like wine, the older the better. For, whereas ARISTOTLE "had, with infinite pains and industry, and not without sin- "gular dexterity, reduced all entities into certain heads, and "placed them in ten classes or predicaments to avoid confu- "sion, and that we might, with the more facility, find out the "true genus and difference of things; which Aristotelian "way hath been received and approved by all Universities, "and the wise men since his time in all ages, as being the "most consonant to reason: yet these *New Philosophers*, as if "they were wiser than all the world besides, have, like fantastic "travellers, *left the old beaten path, to find out ways unknown*, "and have reduced his comely order into chaos; jumbling "the predicaments so together, that their scholars can never "find out the true genus of things." The examples which he adduces in illustration of this disorder, are in fact proofs of the growing taste for experimental inquiry; and it is clear from the context of the whole passage, that BACON was considered by the Aristotelians as having been its chief promoter. "Sometimes," he continues, "these *New Philosophers* tell us, "that heat, cold, &c. are spirits, consequently substances; "sometimes, again, they will have them to be qualities; some- "times to be motions and actions. Thus, Proteus-like, they

"turn

" turn themselves into all shapes, so that we know not in what " predicament to put their heat, or what genus to give it *."

That *New Philosophy*, which had already produced so much embarrassment among the followers of ARISTOTLE, had already also led to the formation of a Philosophical Society, destined, at no distant day, to realize, in some sort, one of BACON's favourite projects. In his letter to King James, written on the publication of the *Novum Organum*, he states, that his chief object in publishing the work, before completing it according to his original plan, was, to try to procure help towards compiling an " experimental history of Nature †." He more than once alludes, in the work itself, to the great things that might be accomplished in philosophical inquiries, by a conjunction of labours; and in a romantic piece, called the *New Atlantis*, he gives an account of a feigned *College* or *Society*, magnificently endowed, and whose business was the improvement of all the departments of physical knowledge. To this College he gives the name of *Solomon's House*. The intention of this piece evidently was, to exhibit a grand and alluring representation of the advantages that might be derived from the co-operation of numbers in scientific pursuits, and of the renown that a Prince might acquire by forming an establishment directed to such purposes. These views and schemes were not forgotten by his followers. In the year 1645, a Society was formed in London, for the purpose of discussing subjects connected with Natural Philosophy, at stated weekly meetings; and the name first given to this Society appears to have been that of the *Philosophical College* ‡.

Some

* Ross's *Arcana Microcosmi*, or the hid secrets of Man's body discovered; with a refutation of Lord BACON's *Natural History*, p. 263, 264.

† BACON's *Works*, vol. iii p. 584.

‡ See BOYLE's *Life*, prefixed to his Works, p. 34. This Society was sometimes called the *Invisible College*.—Ibid. p. 40. 42.

Some of its members being soon thereafter appointed to Professorships in the University of Oxford, a similar Society was established by them in that place. In the year 1659, the principal members of the Oxford branch having returned to London, the two Societies were united; and having, on the Restoration, extended their views to the obtaining a public establishment, they, in 1662, succeeded in accomplishing that object, by being erected into a corporate body, under the title of the *Royal Society.*

There can be no doubt whatever, of the influence of BACON's suggestions, as to the utility of such an institution, upon the minds of those who planned the establishment of this illustrious Society. Its earliest panegyrists and historians bear testimony to this fact. "*Solomon's House*, in the *New Atlantis*, was "a prophetic scheme of the Royal Society." These are the words of GLANVILL, in his address to that body, prefixed to his *Scepsis Scientifica*, published in 1665*. Bishop SPRAT, whose

* The *Scepsis Scientifica* is a republication, with some additions, of GLANVILL's first philosophical work, *The Vanity of Dogmatizing*, published in 1661. The 20th chapter of this work contains a very distinct statement of the important doctrine so often ascribed to Mr HUME,—that we never *perceive* causation in the succession of physical events; a doctrine which fixes the object of physical science to be, not the investigation of the efficient causes of phenomena, but of the general laws by which they are regulated; and for which statement of its legitimate objects, it is always to be remembered, that *physics* is indebted to *metaphysics*. The Aristotelians were provoked by the free spirit of inquiry, and disregard of the authority of their Master, which this work disclosed; and an answer to it appeared in 1663, in a book entitled *Sciri, sive Sceptices et Scepticorum à jure disputationis exclusio.* The author was THOMAS ALBIUS, (WHITE), a secular priest of the Romish Church, and a noted Aristotelian. "HOBBES," says A. WOOD, "had a great respect for WHITE, and when he lived in Westminster, he would often visit him, and he HOBBES; but they seldom parted in cool blood: for they would wrangle, squabble and scold about philosophical matters like young sophisters, though either of them was eighty years of age.

HOBBES

History of the Society, published in 1667, received its public sanction, expresses himself as follows: "The Royal Society "was a work well becoming the largeness of Bacon's wit to "devise, and the greatness of Clarendon's prudence to esta- "blish *." Sprat also informs us, that the Tract published in 1661, by Cowley, entitled, *A Proposition for the Advancement of Experimental Philosophy*, "very much hastened the contri- "vance of the platform of the Royal Society;" and this Tract bears internal evidence that its author's views were originally derived from the *New Atlantis*.

But it is of more importance to show, that the philosophical spirit which actuated the founders of this institution, was chiefly owing to the effects produced by Bacon's writings. And here, again, I must appeal, in the first place, to the testimony of those to whom we are indebted for all that we know of its early history. The fullest account of its origin is given by the celebrated mathematician Dr John Wallis, who was one of those who instituted the weekly meetings begun to be held in London in 1645; and *his* narrative distinctly points to Bacon, as having given a beginning to the taste for experimental science in England. "Our business," says he, "was to discourse and consi- "der of things appertaining to what hath been called the *New* "*Philosophy*, which, from the times of Galileo, and Lord "Verulam, hath been much cultivated abroad, as well as with

---

Hobbes being obstinate, and not able to bear contradiction, those who were sometimes present at their wrangling disputes, held that the laurel was carried away by White."—*Athenæ Oxon.* vol. ii. p. 665. The *Scepsis Scientifica* has, appended to it, a reply to the animadversions contained in White's *Sciri* upon the *Vanity of Dogmatizing*.

* *History of the Royal Society*, p. 144. Copies of this work were sent, by the Society, to foreign Princes, and other eminent persons abroad, in order to furnish them with an authentic account of its history. See Dr Birch's *History of the Royal Society*, vol. ii. p. 207.

" with us in England*." SPRAT always speaks of Lord BACON, as the founder of that experimental school, which came to be embodied in the institution whose history he wrote †; and the testimony of Mr OLDENBURG, its first Secretary, though a foreigner, is equally explicit. " The enrich-
" ment of the storehouse of *Natural Philosophy*, was a work," says he, " *begun by the single care and conduct of the ex-*
" *cellent Lord* VERULAM, and is now prosecuted by the joint
" undertakings of the Royal Society ‡." GLANVILL, whose zeal in defending this establishment, against the attacks of its enemies, well entitles him to respectful notice in the history of philosophy, makes frequent acknowledgements to the same purpose. The following passage contained in the work which he wrote in its defence, and which was published in 1668, under the title of *Plus ultra, or, the Advancement of Knowledge since the days of* ARISTOTLE, is too remarkable to be omitted on the present occasion. " The philosophy that must signify either for light
" or use, must not be the work of the mind turned in upon itself,
" and only conversing with its own ideas; but must be rai-
" sed from the observations and applications of sense, and
" take

---

* See his *Account of his own Life*, in a Letter published in the Appendix to HEARNE's *Preface* to LANGTOFT's *Chronicle*, Number IX.

† See particularly p. 35. *History of the Royal Society*.

‡ *Philosophical Transactions*, No. 22. p. 391.——Mr OLDENBURG frequently alludes to BACON as the *chief* forwarder of experimental philosophy. " When our renowned Lord BACON had demonstrated the methods for a perfect restoration of all parts of real knowledge, *the success became on a sudden stupendous*, and effective philosophy began to sparkle, and even to flow into beams of bright shining light all over the world."—Pref. to *Philosophical Transactions* for 1672. —" Many of the chief Unversities in Christendom have formed themselves into philosophical societies, and have largely contributed their aids to advance Lord BACON's design for the instauration of arts and sciences."—Pref. to *Philosophical Transactions* for 1677.

" take its accounts from things as they are in the sensible " world. The illustrious Lord Bacon hath noted it as the " chief cause of the unfruitfulness of the former methods of " knowledge, that they were but the exercises of the mind " making conclusions, and spinning out notions from its own " native store; from which way of proceeding nothing but dis- " pute could be expected *.—He therefore proposed another " method, which was, to reform and enlarge knowledge by ob- " servation and experiment; to examine and record particu- " lars; and to rise by degrees of induction to general proposi- " tions; and from them to take observation for new inquiries; " so that nature being known, may be mastered, and used in " the service of human life. This was a mighty design, " groundedly laid, and happily recommended by the glorious " author; but to the carrying it on, it was necessary there " should be many heads and many hands, and those form- " ed into an assembly that might inter-communicate their " trials and observations. This the great man desired, and " formed a Society of experimenters in a romantic model; " but he could do no more; his time was not ripe for such per- " formances. *These things, therefore, were considered by the* " *later Virtuosi, who several of them combined together, and* " *set themselves to work upon his grand design* †."

Similar

* Glanvill's *Plus Ultra*, p. 52.

† Ibid. p. 87, 88.—There are some who would fain persuade us, that the taste for experimental philosophy was introduced into England from the Continent, and that the first idea of the Royal Society was copied from similar associations abroad. This, certainly, was not the language of the founders and early historians of that Society It is curious to remark, that while some of our own writers ascribe its origin, and the philosophical spirit which gave it birth, to foreign excitements, there are, on the other hand, foreign writers who trace the Academies of the Continent to the effects produced by the writings of

Similar testimonies occur in many other publications of that day; in the more obscure as well as the more noted. Indeed, there is no room whatever for doubt, that Bacon was generally considered as the *chief* promoter of genuine physics, at a period when the erection of the Royal Society, was of course likely to bring forward the name of any individual, whose labours had contributed, in a remarkable degree, to foster the growth of physical science. Cowley, surely, will not be rejected as an evidence of the general sentiment, merely because he has recorded his testimony in verse. He was, as already mentioned, a zealous advocate for a public institution, directed to the purposes of experimental philosophy; and, on the establishment of the Royal Society, he addressed to it that celebrated Ode in which he represents Bacon as its Legislator. Dr Henry Power calls Bacon "the Patriarch of experimental "philosophy;" in a work published in 1664, in which he de-

 tails

---

of Bacon. The following passage is extracted from a very learned *History* of one of the earliest of these Academies.—"Sed, quæ superest dicenda, supremam, et, ut nobis videtur, proximam condendæ Academiæ enarrabimus occasionem. Scilicet postquam, ineunte circiter priori seculo, non inter Britannos solum, sed universi quoque orbis incolas, immortalitati commendatissimus, Franciscus Baco de Verulamio, supremus regni Britannici Cancellarius, variis iisque ad sapientiæ normam elucubratissimis scriptis, utilissima emendandæ atque instaurandæ historiæ naturalis dedisset consilia, et absolutissimis rationibus firmasset: *non Angli modo haud incassum se moneri atque excitari passi sunt, sed exteræ quoque gentes*, imprimis Galli Italique, sanioris consilii patientes, tanta contentione cum qualibuscunque scientiis generatim, tum præcipue rerum naturalium studio animum intenderunt, adeo, ut ex illo tempore visi sint homines nihil, vel remotissimis naturæ visceribus abstrusum, quod non captis ex Baconis mente experimentis curiosius rimarentur, relicturi. *Atque hic ardor, hæc studia magnam quoque partem condiderunt Academiarum Societatumque hactenus memoratarum.*" Buchneri, *Academ. Naturæ Curiosor. Hist.* cap. i. § 7.

tails the discoveries of Galileo, Torricelli, and Pascal *. "It is certain," says Mr Havers, in the preface to a work also published in that year, entitled, *Philosophical Conferences*, "that Lord Bacon's way of experiment, as now prosecuted "by sundry English gentlemen, affords more probabilities of "glorious and profitable fruits, than the attempts of any other "age or nation whatsoever †." Dr Joshua Childrey, in the introduction to his *Natural Rarities of England*, a book of the same period, and which gave rise to a new class of publications in Natural History, states, that he had given it the title of *Britannia Baconica*, in order to indicate its connection with those studies which Bacon had originated ‡. Anthony Wood has preserved a letter from the same person to Mr Oldenburg, Secretary of the Royal Society, in which he says, that he had long been engaged in the philosophical inquiries "which form the busi-"ness of that body; in consequence of having fallen in love with "Lord Bacon's Philosophy as early as the year 1646 ||." Mr Evelyn, one of the most active and respected of the early members of the Society, has, in several of his works, alluded to the beneficial effects produced by Bacon's philosophical writings. In the introduction to his *Sylva*, which work he published in 1664, at the request of the Royal Society, he takes occasion to state the philosophical principles by which it professed to be guided, in terms which clearly point to the quarter from whence they were derived. "They are not hasty," says he, "in pronouncing from a single or incompetent number of "experiments;

* Power's *Experimental Philosphy*, p. 82.

† *Philosophical Conferences*, translated from the French, by G. Havers, in two volumes folio.

‡ *Britannia Baconica, or the Natural Rarities of England*, 1661, 8vo. "From this work," says A. Wood, "Dr Plot took the hint of his *Natural History* of Oxfordshire."

|| *Athenæ Oxonienses*, vol. ii. p. 468.

" experiments; but after the most diligent scrutiny, and by " degrees, and by wary inductions faithfully made, they re- " cord the truth and event of trials, and transmit them to po- " sterity. They resort not immediately to general proposi- " tions upon every specious appearance; but seek light and in- " formation from particulars, that they may gradually advance " to general rules and maxims." In an after work, he speaks of BACON's services in the following expressive terms: " By " standing up against the Dogmatists, he emancipated and set " free philosophy; which had long been a miserable cap- " tive; *and which hath ever since made conquests in the ter-* " *ritories of Nature* *."

It was about this period, that Mr BOYLE was honoured with the appellation of the second BACON †, in compliment to his exertions to advance the knowledge of experimental physics; and there can be no doubt, that his discoveries and exertions did contribute essentially to establish the credit of the English School. Neither can there be any doubt, as to the influence of BACON's writings in determining the nature and objects of his philosophical pursuits. This is admitted, or implied, in many parts of his works ‡. It is clear, indeed, that he was considered by his contemporaries as a marked disciple of BACON. " You have," says Dr BEALE, in one of his letters to him, upon the subject of his discoveries, " *particularised,* " *explicated, and exemplified, those fair encouragements, and* " *affectionate directions, which Lord* BACON *in a wide generali-* " *ty*

* EVELYN's *Numismata.*

† See GLANVILL's *Plus Ultra*, p. 57.

‡ BOYLE's *Works*, vol. i. p. 305, 6.; vol. ii. p. 472.; vol. iii. p. 422.; vol. iv. p. 59, 246.; vol. v. p. 567.

" *ty proposed* *." In another letter, to Mr HARTLIB, who like himself was an early and zealous promoter of the Royal Society, Dr BEALE thus rapturously expresses his feeling of the pleasure which BOYLE's experimental labours were calculated to afford to the followers of Lord BACON. " To those that have " been tired and wearied, as I have been in the several ways " of former philosophers ; to those who have condescended to " take deep notice of the insufficiency of conjectures, and un- " grounded ratiocinations, and who have submitted their pa- " tience to the *severity of Lord* BACON's *inquisitions*, here are " offered such pleasing refreshments, as give us the relish of " that Virgilian simplicity, which was so highly admired by " SCALIGER in these verses :

" Tale tuum carmen nobis, divine poëta,
" Quale sopor fessis in gramine, quale per æstum
" Dulcis aquæ saliente sitim restinguere rivo †."

They who have overlooked or disregarded the proofs of the connection between what BACON enjoined, and BOYLE performed, are not likely to have recognized any traces of the lights held out by the former, in the philosophy of NEWTON. Yet it appears undeniable, that the latter was guided by principles which BACON alone had taught ; and that his philosophy derives its imperishable character from his rigid adherence to them. To begin with the examination and comparison of phenomena in order to rise to the knowledge of general truths, and to proceed

* BOYLE's Works, vol. vi. p. 405.

† This letter is printed in the *Life* of BOYLE, prefixed to his works, p. 63.—" Dr BEALE was elected a Fellow of the Royal Society in 1662. Several of his papers are printed in the *Transactions*. He was a man of excellent parts, and great public spirit; and the character which his friend Mr HARTLIB gave of him was, that there was no man in the island who could be made more universally useful."—BIRCH's *Hist. of the Royal Society*, vol. iv. p. 235.

ceed gradually from truth to truth, till we reach the most general that can be discovered,—these are the principles of philosophizing which Bacon unfolded, and which Newton has, in the most emphatic terms, embodied with his discoveries. "*Quel témoignage*," exclaims an eminent French philosopher, "*rendu par le génie inventeur au génie des méthodes* *!" Such, indeed, was the connection between the logic of the *Novum Organum*, and the philosophy of the *Principia*, that it was only where the one was followed, that the other prevailed. The sublime Geometry of the *Principia*, says Maclaurin, was admired by all, but it was only among minds trained by Bacon's precepts that it found a ready reception for its Philosophy †.

To these proofs of the influence of Bacon's precepts and exhortations, reflected in the acknowledgments, the views, and the discoveries of the early founders of the English School of Experimental Philosophy, I have yet to add those which are furnished by the writings of its opponents and detractors. The public countenance given to that School by the erection of the Royal Society, early excited an extraordinary degree of jealousy on the part of the Universities; and a keen spirit of opposition among the remaining supporters of the Aristotelian philosophy. Sprat accordingly found it necessary, in his *History* of the Society, to employ a long argument to prove, that this new establishment would be attended with

* Degerando—*Histoire comparée des Systemes de Philosophie*, tom. i. p. 396.—The introduction to Dr Pemberton's *Account of Newton's Discoveries*, a work, "the greater part of which was read and approved," as we are told in the preface, by Newton himself, contains a summary of the doctrines of the *Novum Organum*; and its author is represented as the first who taught those rules of philosophizing which Newton followed, and which his discoveries so nobly confirmed.

† Maclaurin's *Account of Newton's Discoveries*, p. 59, 60.

no bad consequences either to religion, or to the existing seminaries of knowledge. GLANVILL was obliged to enter into a serious refutation of an assertion, that " ARISTOTLE had had " more advantages for knowledge than the Royal Society, ei- " ther had, or could have *." The panegyrics which these writers bestowed upon the Institution, and upon Lord BACON as its Master, appear to have filled the followers of ARISTOTLE with a still more envenomed hate to both. The most forward of their champions was Dr HENRY STUBBE, who, after studying at Oxford, had served for some time in Scotland with the Army of the Parliament; but having on the Restoration made his peace with the Government, he was appointed King's Physician for the Island of Jamaica, from whence he had lately returned, to practise in his own country. He was, according to ANTHONY WOOD, " the most noted Latinist and Grecian of " his age, and a singular Mathematician;" but he seems to have been as deficient in judgment as he was violent in temper; which last defect, his biographer in great simplicity ascribes to his "carrot-coloured hair †." His publications against the Royal Society, and the whole body of experimentalists, were numerous,

* " I desire the reader to know, that after Mr JOSEPH GLANVILL had written certain things against ARISTOTLE, it was the desire of some scholars, that ROBERT CROSSE, a noted philosopher after the ancient way, should be brought acquainted with him. In 1667, GLANVILL was therefore conducted to his house, where CROSSE did in a sufficient manner vindicate ARISTOTLE; and did plentifully declaim against the proceedings of the Royal Society. GLANVILL being surprised, he did not then much oppose him; but afterwards he did, to the purpose; especially against this hypothesis of CROSSE, *that ARISTOTLE had more advantages for knowledge than the Royal Society, or all the present age had or could have, because he did* totam peragrare Asiam."—*Athenæ Oxonienses*, vol. ii. p. 753. See the account which GLANVILL himself gives of this conference, *Plus Ultra*, p. 4, 5.

† WOOD's *Athen. Oxon.* vol. ii. p. 562, 563.

rous, and all of them replete with misapplied learning, and vehement abuse. The course of his reasoning is not a little curious. " I have so small a regard," says he, " for deep and " subtle inquiries into natural philosophy, that could physic " be unconcerned, could religion remain unshaken, could edu- " cation be carried on happily, I should not intermeddle; but if " we look *de facto* upon those experimental philosophers, and " judge how little they are fitted for trusts and managements " of business, by their so famed *mechanical education*, we must " rise as high in our resentments as the concerns of the pre- " sent age and of posterity can animate us." The grounds which he more particularly assigns for entertaining these " high " resentments" against the experimentalists, are, first, their neglect and contempt of the Aristotelian logic; " that art," says he, " by which the prudent are discriminated from fools; " which informs us of the validity of consequences, and the " probability of arguments, and which forms statesmen, di- " vines, physicians, and lawyers." In the next place, he contends, that the innovating spirit of their philosophy would lead to dangerous revolutions. " In such times," says he, " as I " thought it our interest to subvert the monarchy of England, " and the repute of the clergy, I was passionately addicted to " this *new philosophy;* for I did not question but the autho- " rity of all antiquity in *spiritual* affairs would vanish, when it " appeared how much churchmen were mistaken in the com- " mon occurrences and histories of nature. How rational this " opinion of mine was, and how it is verified in these days, let " the Hierarchy and Universities judge *."

With

* Stubbe's *Legends no Histories; or, a specimen of some animadversions upon the History of the Royal Society.* Pref. 4to. Lond. 1670.

With such views of the new philosophy, this infatuated Aristotelian could not but wish to decry the authority of any one who was more particularly considered as its author. That he himself looked upon the experimentalists of that day as the disciples of Bacon, is sufficiently evident from this, that his common mode of designating them, is to call them in derision "*a Bacon-faced generation**." To abuse Lord Bacon, and to depreciate his philosophical character, are accordingly his favourite topics. Nor does he leave us in any doubt as to the cause of his enmity. It was, as he expressly tells us, "*because the repute* "*of Lord* Bacon *was great in that age* †;" and because "*the* "*Royal Society pretended to tread in his footsteps* ‡." He allows that Bacon was a wise and eloquent man; but with respect to his censures of the philosophy and methods of the ancients, there, says he, he was insufferably in error. "Who "knows not," he asks, "how *Herbary* had been improved by "Theophrastus, Dioscorides, the Arabians, and other Peri- "patetics? who can deny that *Physic*, in every part of it was "improved, by Galen and others, before the Lord Bacon "ever sucked? and what accessionals had not *Chemistry* recei- "ved by the cultivation of the Aristotelians, before his *House* "*of Solomon* was dreamed of? Let us, therefore, not be con- "cluded by the aphorisms of this Lord. Let his *insulse ad-* "*herents* buy some salt, and make use of more than one grain "when they read him; and let us believe better of the an- "cients, than that their methods of science were so unfruit- "ful ‖." It was the confident belief of this misguided man, that

* Stubbe's *Epistolary Discourse concerning Phlebotomy*, passim. 4to. Lond. 1671.

† *Lord Bacon's Relation of the Sweating Sickness examined*, p. 2. 4to. Lond. 1671.

‡ *Legends no Histories*, p. 29.

‖ *Lord Bacon's Relation of the Sweating Sickness examined*, Pref. p. 5.

that Bacon's fame was wholly owing to the false notions of philosophy then entertained, and that it could not fail to fade with the recurrence of sounder views. "The Lord Bacon," says he, "is like great piles; when the sun is not high, they "cast an extraordinary shadow over the earth, which lessen-"eth as the sun grows vertical *." How vain the prophecy involved in this uncouth simile! The fame of Bacon has brightened as Science has advanced, every new discovery bringing a fresh proof of that transcendent sagacity which enabled him so unerringly to plan and predict the indefinite enlargement of her Empire.

The preceding illustrations of the influence of Bacon's writings, are confined to the effects which they produced in England. It remains to be inquired, Whether they were productive, in any degree, of any similar effects, in the other countries of Europe? It is the opinion of some, who are far from being otherwise sceptical as to their influence, that these writings were for a long period, but little known upon the Continent; and consequently, that all their effects, of a *direct* kind, were limited to England. This opinion has been lately avowed by one of the most enlightened and ardent of Bacon's admirers; one whose extensive knowledge in regard to the history of learning, I shall hardly, I trust, be suspected of any intention to bring into doubt, by dissenting from his statements on this particular question.

"That the works of Bacon," says Mr Stewart, "were but "little read in France till after the publication of D'Alem-

* Stubbe's *Legends no Histories*, p. 28.

" BERT's *Preliminary Discourse* to the *Encyclopedie*, is, I be-
" lieve, an unquestionable fact; *not* that it necessarily follows
" from this, that, even in France, no previous effects had been
" produced by the labours of BOYLE, of NEWTON, and of the
" other English experimentalists, trained in BACON's school."
Mr STEWART farther observes, generally, " that the merits of
" BACON failed, for *a century and a half*, to command the ge-
" neral admiration of Europe. Nor was BACON himself," he continues, " unapprised of the slow growth of his posthumous
" fame. No writer seems ever to have felt more deeply, that
" he properly belonged to a later, and more enlightened age;
" a sentiment which he has pathetically expressed in that
" clause of his testament, where he 'bequeaths his name to
" ' posterity after some generations shall be past *.' "

In making these statements, Mr STEWART seems to have overlooked a crowd of testimonies, which prove in the most satisfactory manner, that BACON's philosophical fame was *early* established, not only in France, but in all the other countries of Europe, where letters were cultivated. I must farther be permitted to express some doubt, whether Mr STEWART has rightly interpreted that truly affecting clause of BACON's Testament to which he so eloquently alludes. There are no contemporary publications which give any countenance to the supposition, that BACON

---

* *Dissertation on the Progress of Metaphysical, Ethical, and Political Philosophy*, p. 58, 85.; prefixed to the *Supplement to the Encyclopædia Britannica.*— These statements have been already questioned, in part, in the article of the *Edinburgh Review* before referred to. The able author of that article contends, that BACON's *fame* was early and generally established throughout the Continent; but he admits, that it was late before any beneficial effects were produced by his *philosophy*.

con himself thought his writings had not met with due attention from the learned world. We have, indeed, his own evidence to the contrary, in regard to the most important, and, as he himself says, the most "abstruse" of them,—the *Novum Organum*. "I have received," says he, "*from many parts be-*"*yond the seas*, testimonies touching that work, much beyond "what I could have expected at the first in so abstruse an "argument *." It is probable, therefore, that the bequest of his Name to future generations, referred rather to his *public* than to his *philosophical* character. In his *act of submission* presented to the House of Peers after his disgrace, he implored them to recollect, that there are "*vitia temporis* as well as "*vitia hominis;*" and he perhaps soothed his wounded spirit with the hope, that posterity would find an excuse for his frailties, in the lax notions and practices of the age; and would look upon his fall, to use a comparison of his own, "but as a "little picture of night-work, among the fair and excellent "tables of his acts and works †." The exact terms of the clause, besides, seem to countenance the interpretation, that his hopes pointed to the greater *candour*, rather than to the greater *intelligence* of after times. "My name and memory," says he, "I leave to men's *charitable* speeches, and to foreign "nations, and the next ages ‡." But whatever opinion may be entertained upon this point, it will, I hope, appear evident in

---

* *Epistle* to Bishop Andrews, prefixed to *An Advertisement touching an Holy War*, written in 1622, and published by Dr Rawley in 1629, in a collection entitled, *Certain Miscellany Works of Lord Bacon*, 4to.

† *Epistle* to Bishop Andrews, prefixed to his *Holy War*.

‡ Bacon's Works, vol. iii. p. 677.

in the sequel, that Bacon's works were well known, and their beneficial effects largely acknowledged, in foreign countries, long before the period pointed at in the statements of Mr Stewart.

In the first place, then, I must observe, generally, that the testimony of such of Bacon's contemporaries as allude to his writings, as well as of his earlier Biographers and Editors, stands decidedly opposed to the supposition, that his fame was of slow growth upon the Continent. The information which they give upon this point, rather, indeed, supports a contrary conclusion, —that the early celebrity of his writings abroad, contributed to enhance their credit at home. Thus, Osborn tells us, that it was the voice of foreign fame which silenced the cry of atheism, raised against them by some of the School-Divines of his own country *. Mr Stewart dates the full acknowledgment of his philosophical merits *in England* from the period of the establishment of the Royal Society †. Now, in the account of Bacon's Life, published in 1657 by Dr Rawley, who had been for many years his domestic Chaplain, it is distinctly stated, "that his fame was greater, and sounded louder in fo-" reign parts than at home;" and it is added, "that divers of " his works had been translated more than once into other " tongues, both learned and modern, by foreign pens ‡." Dr Rawley had, some years before, received a strong proof of the early celebrity of his late Patron's writings abroad, in a letter from Isaac Gruter, which contains the following passage: "Lewis Elziver wrote me lately from Amsterdam, that " he

* Osborn's *Miscellany of Essays, Paradoxes and Discourses*, Preface.

† *Dissertation*, p. 158.

‡ *Life*, prefixed to Rawley's *Resuscitatio*, first published in 1657.

" he was designed to begin shortly, an edition in *quarto*, of all " the works of Lord Bacon ; and he desired my advice, and " any assistance I could give him ; to the end that, as far as " possible, these works might come abroad with advantage, " *which have been long received with the kindest eulogies, and* " *with the most attested applause of the learned world* *." This letter was written in 1652, only twenty-six years after Bacon's death ; and the important statement which it contains, in regard to the early impression made by his writings in foreign countries, will be found fully corroborated by a more particular examination of their literary records.

With respect to France, the only *direct* authority to which Mr Stewart refers, when he states it as " an unquestionable " fact," that Bacon's writings were little known in that country till after the publication of the *Encyclopedie*, is that of Montucla. After quoting a short passage to that effect from the preface to this writer's *History of Mathematics*, he farther remarks, in a Note, that " Bayle has devoted to Bacon only " twelve lines of his Dictionary †." But, surely, no weight whatever can be attached to this circumstance, when it is recollected, that Bayle has not devoted even *one* line of that work, in the shape of a separate article, either to Galileo or Descartes. I must, besides, observe, that his notice of Bacon, scanty as it is, yet contains enough to show, that Montucla's observation is not well founded. The article mentions, generally, that Bacon's writings " had been favour-

* Tennison's *Baconiana*, p. 229 —Dr Wats, in the *Dedication* prefixed to his translation of the *De Augmentis Scientiarum*, published in 1674, speaks of Bacon " as an author well known in the European world."—Dr Shaw, in the *Preface* to his edition of Bacon's works, published in 1733, says, that " foreigners appear to have extolled him in a superlative manner."

† *Dissertation*, p. 58.

" ably received by the world." It states, that the Treatise *De Augmentis Scientiarum* had been reprinted at Paris in 1624; that is, the year after it was published in London; and reference is made to some high eulogiums, which had been pronounced by French writers upon that important work. It farther mentions, that a number of editions of a French translation of his moral and political pieces had been called for, within a short period after its publication; a circumstance which BAYLE casually notices in another of his works, the *Reponse aux Questions d'un Provincial* *.

That BACON's philosophical views were well known in France, before his death, is a fact, for which we have an authority the more satisfactory, that it is that of the biographer and disciple of his great French rival, in the reformation of knowledge. " While DESCARTES," says ADRIAN BAILLET, in his copious and instructive life of that philosopher, " was in Paris in 1626, " he heard the news of the death of the Lord Chancellor " BACON, which happened in April of that year. The intel- " ligence very sensibly affected those who aspired to the re- " establishment of true philosophy; *and who knew, that* BACON " *had been labouring in that great undertaking for several years* " *before his death.* The accomplishment of this heroical de- " sign," continues this devoted Cartesian, " was reserved for " a still more extraordinary genius; *but the praises which* " BACON *received* were justly due, even from those who did " not approve of his plan for the reformation of philosophy †."

The

* Chap. 9.—*Troisième partie.*—BACON's *Essays*, and his *Advancement of Learning*, were translated into the French language a considerable time before his death. His *Natural History*, and *New Atlantis*, were translated into that language by PIERRE D'AMBOISE in 1631. BACON's works, says this writer, " de- " serve a place in all libraries, and to be ranked with the noblest literary monuments of antiquity."

† *La Vie de M. Descartes*, par BAILLET, tom. i. p. 147, 148. 4to.

The same writer admits, that BACON's example may have been of some use to his French rival; inasmuch as it was calculated to encourage him in his design, to abjure the authority of the ancients, and to re-establish the sciences upon a new foundation *. He farther observes, that DESCARTES thought BACON's method very well suited to the views of those who were willing to incur the expence and trouble of instituting experiments †. In making this observation, he refers to some remarkable passages in DESCARTES's letters to Father MERSENNE; one of which is as follows: "You formerly wrote me, that you "knew persons, who were willing to labour for the advance-"ment of the sciences, at the cost of all sorts of observations "and experiments; now, if any one who is inclined this way, "could be prevailed upon to undertake a history of the ap-"pearances of the Heavenly Bodies, to be drawn up accord-"ing to the *Verulamian method, without the admixture of hypo-"thesis;* such a work as this would prove of great utility, and "would save me a great deal of trouble in the prosecution "of my inquiries ‡."

Thus

---

* *La Vie de M. Descartes*, tom. i. p. 148.—DESCARTES was about thirty years of age at BACON's death, and did not publish any of his principal works till several years after that period.

† Ibid. p. 149.

‡ *Lettres de M. Descartes*, tom. iv. p. 210. Paris edit. 1724.—It appears from the following passage in one of Sir KENELM DIGBY's letters to FERMAT, the rival of DESCARTES in mathematical science, that this eminent geometer was a great admirer of the works of BACON: "Je ne sçaurois m'empécher de vous envoyer quelques vers que le plus grand genie de nôtre Isle pour les Muses écrivit au Chancelier BACON, qui étoit son grand ami, et que vous témoignez étre fort le vôtre en le citant souvent." 13. Fev. 1658.—*Lettres* de M. FERMAT, p. 198. annexed to his *Opera Mathematica.*

Thus, it is clear, that more than a hundred years before the appearance of the *Encyclopedie*, Bacon's writings had attracted so much notice in France, as to force them upon the attention of those who were but little disposed to relish their philosophy. It farther appears, that the first doubts that were entertained as to the sufficiency of the method of Descartes, originated among those of his countrymen who had imbibed the spirit of Bacon's Logic. The doctrines of the *Novum Organum* are professedly taken as the basis of the argument, in a letter addressed to Descartes in 1648, by a correspondent who wishes to convince him, that in physical science, no principles ought to be admitted, but such as have been previously derived from facts *. In a piece, by a different author, written some years later, entitled *Remarques sur la Methode de* Descartes, Bacon's method is characterised as follows: "One "sees so much judgment in the rules laid down in the *Novum* "*Organum*, for guiding the understanding in the search of "truth, that one might almost believe its author had been in- "spired. This work, indeed, has some defects, particularly in "its language which is often scholastic and fanciful; but far "from wishing to dwell upon them, we ought to proclaim, "*that it is only since the time of* Bacon, *that the human mind* "*has followed a proper plan in matters of philosophy* †." It is worthy of notice, that the author of this eulogium speaks of the Royal Society of London, then recently established, in terms of great approbation; and as being likely to realise all Bacon's views for the advancement of the Sciences.

Gassendi

---

* *Lettre premiere* à M. Descartes, prefixed to his *Treatise on the Passions*, Paris edit. 1726.

† *Remarques sur la Methode de Descartes*, p. 128, 129; annexed to his *Discours de la Methode*, Paris, 1724.

Gassendi was one of the earliest disciples of Bacon in France; and he was also one of the earliest and most strenuous opponents of Descartes's Philosophy. He has characterized the principles of philosophizing, which these two reformers respectively professed, in a very clear and able manner, in the *tenth* and *eleventh* chapters of his treatise *De Logicæ origine, et varietate* *. The reformation attempted by Bacon, is there pronounced a truly great and heroical undertaking. In another work, his excellent account of the life of his celebrated friend Peiresc, there is a passage, in which Bacon is mentioned in a way particularly deserving of notice in the present discussion. "No man," says Gassendi, speaking of his friend, "made more observations, or caused more to be "made; to the end, that at last some notions of natural "things, more sound and pure than those commonly received, "might be collected; for which reason, he admired the ge-"nius, and approved the design of that great Chancellor of "England, Sir Francis Bacon †." Now, Peiresc died in 1637, only eleven years after Bacon. But this is not all. He was the first man in France, according to Bailly, who deserved the name of an astronomer ‡; and he, as well as Gassendi, who was also distinguished as an astronomer,—was a correspondent, friend, and admirer of Galileo; yet we see, that Bacon was considered by both, as the great leader of reform in Natural Philosophy.

There are many other testimonies, of a similar purport, in the writings of those who were conversant with the French experimentalists. One of these, that furnished by

* Gassendi, *Opera*, tom. i.

† Gassendi's *Life of Peiresc*, Book vi. p. 207. of the English translation.

‡ *Histoire de l'Astronomie Moderne*, liv. iii. § 20.

Sorbierre, in his famous *Voyage en Angleterre*, published in 1664, is probably entitled to more consideration than his own name could, of itself, attach to it; for he had acted for some time as the Secretary of one of those associations of Parisian philosophers in which the *Academy of Sciences* had its beginning *. "Ce grand homme," says he, speaking of Bacon, "est sans doute celuy qui a le plus puissamment solicité les in-"terests de la physique, et excité le monde à faire des ex-"periences †." A similar observation is made, and in words equally strong, by the Abbé Gallois, in one of the numbers of the *Journal des Savans*, published in 1666; a year signalized by the establishment of the *Academy of Sciences* ‡. Bacon is also represented as the father of the inductive or experimental method, by John Baptiste du Hamel, the person who first held the office of Secretary to that Academy. His treatise *De Mente Humana*, published in 1672, contains several chapters of commentary upon Bacon's Philosophy ‖. We are told by Fontenelle, that Du Hamel was censured by his contemporaries, as not being sufficiently regardful of the merits of Descartes §. With such views as he seems to have imbibed from the writings of Bacon, he must, indeed, have been but little disposed to look up to Descartes as the oracle of philosophy.

It

* Birch's *History of the Royal Society*, vol. i. p. 27.

† Sorbierre, *Relation d'un Voyage en Angleterre.*

‡ "On peut dire que ce grand Chancelier est un de ceux qui ont les plus contribué à l'avancement des sciences."—*Journal des Savans*, du 2. Mârs, 1666.

‖ Lib. i. cap. 3. § 7.; Lib. iii. cap. 6, 7, 8, 9.

§ Fontenelle, *Eloge de Du Hamel.*

It would be quite unnecessary to proceed any farther, in accumulating French authorities. The preceding deduction is sufficient to establish, not only that there is no foundation whatever for the statement, that BACON's writings were little known in France previous to the publication of the *Encyclopedie;* but that they had, at a much earlier period, made an impression in that country, greatly favourable to the progress of truth *. I shall, therefore, go on to inquire, though in a cursory manner, whether there are any similar proofs of equally early attention having been paid to them, by the other lettered nations of the Continent.

Turning to Italy, we shall find, that there also, BACON's philosophical works had attracted considerable notice, even before his death. It is evident from his correspondence with Father FULGENTIO, that the Venetian philosophers were extremely inquisitive about his publications †. His correspondence with Father BARANZAN proves, that the *Novum Organum* was known, and had found anxious readers, in the north of Italy, at a surprisingly

---

* D'ALEMBERT, in his Preliminary *Discourse*, assumes, that BACON's writings remained long unheeded, and then exerts his ingenuity to show how this result was to be expected. "La scholastique qui dominoit de son temps, ne pouvoit être renversée que par des opinions *hardies et nouvelles;* et il n'y a pas apparence qu'un philosophe, qui se contente de dire,—*Voilà le peu que vous avez appris, voici ce qu'il vous reste à chercher*, soit destiné à faire beaucoup de bruit parmi ses contemporains." But were not BACON's opinions sufficiently bold, new, and animating, to attract the notice of an age already disposed to innovation? Did he not proclaim in the most energetic terms, that the whole of the antient systems and methods of philosophy must be abandoned as corrupt and incapable; that the true path to science had been delineated only by him; and that countless discoveries waited to reward those who should follow that path with free minds and regulated perseverance?

—— "He try'd each art, reprov'd each dull delay,
Allur'd to brighter worlds, and led the way."

† TENNISON's *Baconiana*, p. 196, 197.

singly early period. BARANZAN was a Piedmontese monk of the order of Barnabites, and officiated as a Professor of Philosophy and Mathematics, in the Colleges of his order. He had early distinguished himself as a writer on philosophical subjects, and as a discarder of the authority of ARISTOTLE. After perusing the *Novum Organum*, he appears to have begun a correspondence with BACON, one of whose letters to him is fortunately preserved in the account of BARANZAN's life in NICERON's *Memoirs* *. This letter is dated in 1622, only two years after the publication of the *Novum Organum;* and was evidently written, in answer to some queries of BARANZAN, touching its fundamental doctrines. The whole letter is on this account extremely interesting; but the following passage may be cited, as more particularly calculated to show, how much philosophy then stood in need of such a guide as BACON. "De "multitudine instantiarum, quæ homines deterrere possit, hæc "respondeo: quid opus est dissimulatione? Aut copia in-"stantiarum comparanda, aut negotium deserendum. Aliæ "omnes viæ, utcunque blandiantur, imperviæ." It is worthy of notice, that BACON concludes this letter with an earnest request, that BARANZAN would employ himself in framing a description of the heavenly bodies, exactly of the kind which DESCARTES afterwards wished some competent person to undertake; as mentioned in his letter, before quoted, to Father MERSENNE. But this ingenious Italian was not permitted to profit by the exhortations of his illustrious correspondent, for he died soon after the date of this letter, at the early age of thirty-three.

There

* "Elle est trop interessante," says NICERON, who possessed the original letter, "et fait trop bien connoitre la maniere de philosopher, qu'ils vouloient tous deux introduire, pour ne la point communiquer au publique."—*Memoires pour servir à l'histoire des Hommes Illustres*, tom. iii. p. 43.

There is a letter from Sir Toby Matthew to Bacon, which contains a curious piece of information, not hitherto particularly noticed, I believe, by any of the learned. It was written from Brussels in 1619, when Sir Toby was on his return to Florence, where, during a former residence, he had published an Italian translation of Bacon's *Essays*. "There "was with me to-day," says he, "one Mr Richard White, "who hath spent some time at Florence, and is now go- "ing to England. He tells me, that Galileo *had answer- "ed your discourse concerning the flux and re-flux of the sea;* "and was sending it unto me; but that he hindered Ga- "lileo, because his answer was founded upon a false sup- "position; namely, that there was in the ocean a full sea but "once in the twenty-four hours. But now," adds Sir Toby, "I will call upon Galileo again *." As the discourse on the *Tides*, here alluded to, was not published till several years after Bacon's death †, it must have been sent to Galileo in manuscript. What farther communication took place upon the subject, does not appear. There is no allusion to any of Bacon's writings, so far as I know, in the works of Galileo; though the circumstance just mentioned, and the unquestionable notoriety of these writings in Italy, during his time, render it difficult to believe, that he had not perused them. The following passage, contained in a letter written from thence to the Earl of Devonshire, near, but before the time of Bacon's death,

* Bacon's *Works*, vol. iii. p. 562.

† It was first published, I believe, by Isaac Gruter in 1653, in the collection entitled *Fran. Baconi de Verulamio Scripta in Naturali et Universali Philosophia*, 12mo, Amst. The pieces contained in this collection, were given to Gruter by Sir William Boswell, the English Resident in Holland, to whom Bacon had committed them by his will.

furnishes an additional proof of that notoriety. "Lord Bacon," says the writer, "*is here, more and more known, and his works* "*more and more delighted in* *." .

There was an Italian philosopher of that period, whose ardent genius, the cruel torture of the rack, and twenty-seven years imprisonment, had not been able to repress; who fortunately found a friend, to publish in Germany, the works which he penned in the prisons of Naples; and who has had the honour to be placed in the same rank with Bacon, by no less a judge of philosophical merit than Leibnitz. This was Campanella. "If," says Leibnitz, "we compare Descartes and "Hobbes, with Bacon and Campanella, the former writers "seem to grovel upon the earth,—the latter to soar to the "heavens, by the vastness of their conceptions, their plans, "and their enterprises."—"After looking," says Mr Stewart, (from whose rich stores of varied erudition I have borrowed this quotation,) "into several of Campanella's works, "with some attention, I must confess, I am at a loss to con- "ceive, upon what grounds this eulogy proceeds †." But, however just Mr Stewart's surprise, Leibnitz was not the first who conjoined the names of Bacon and Campanella. Tobias Adams, the person who performed the task of editing those works which Campanella wrote in prison, tells us, in his introduction to the *Realis Philosophia* of the latter, published at Frankfort in 1623, that Campanella, like the great Verulam, took experience for his guide, and drew his philosophy from the book of nature ‡. The comparison here, is as unsound, as the eulogy

* See Bacon's Life, prefixed to Rawley's *Rescuscitatio*.

† *Dissertation*, p. 39.

‡ *Realis Philosophiæ Epilogisticæ partes quatuor; hoc est, de rerum naturâ, hominum moribus, politica, et œconomica; cum adnot.* Thob. Adami.

eulogy of LEIBNITZ is excessive; but it is remarkable, as showing, that the scope and objects of BACON's Philosophy were known and approved, at this early period, in Germany. We have another illustration of the early diffusion of his views in that country, in COMMENIUS's *Synopsis Physicæ ad lumen divinum reformatæ*, published in 1643; in which work, the author speaks of the *Novum Organum* in the highest terms of praise; and warns his readers, that it was not his wish to interfere with the great plan of discovery which it proposes; but to make a trial, whether the lights of Scripture might not assist in the interpretation of nature *.

Among the German writers of the *later* half of the seventeenth century, who either professedly or incidentally treat of the history of philosophy, there are various references to be found to the writings of BACON, coupled with the strongest acknowledgments of their beneficial influence. Some of them ascribe merits to his works which have been pointedly disclaimed by the more discriminating of his English admirers. Thus MORHOF, besides the other praises which he lavishes upon him, affirms

---

* "Ego quia in lumine Dei lumen videre visus sum, temperare mihi non potui, quin, advocato in auxilium Deo, novas naturalium hypotheses in novam methodum redigere, discipulisque Scholæ hujus dictare, tentarim. Non quod magni VEULAMII consilio (qui ab axiomatibus, antequam de omnibus et singulis plenæ per universam Naturam inductiones exstent, abstinendum esse censet) adversus ire vellem; sed ad capiendum interea experimentum, numnam ratione hac plus luminis, ad Naturæ arcana facilius observandum, inferri possit mentibus."—COMMENII, *Physicæ ad lumen divinum reformatæ Synopsis*, Præf.

In this work, also, CAMPANELLA is mentioned in conjunction with BACON, for reasons which render the passage deserving of notice here. "Videat autem qui volet CAMPANELLAM et VERULAMIUM (hos enim HERCULES, qui debellandis monstris expurgandisque Augiæ stabulis, feliciter admoverunt manus commonstrasse; et illis, quos Aristotelicæ vanè turgidæ Philosophiæ dementatos tenet authoritas, opposuisse, sufficiat); et quam sæpè à vero aberrent Aristotelicæ assertiones, palpare poterit."—Præf.

affirms, that his works contain the germs of many important discoveries in physics, the glory attached to which, though wholly reaped by others, was partly due to him *. His services to physics, are much more correctly indicated, by another well known German writer of that period, namely, Baron Puffendorf. "It was the late Chancellor Bacon," says he, "who raised "the standard, and urged on the march of discovery; so that if "any considerable improvements have been made in philoso- "phy, in this age, there has been not a little owing to that "great man †."

Descending somewhat lower in point of time, though keeping still within the period of the supposed abeyance of Bacon's fame on the Continent, we find Buddeus, a writer of unquestionable knowledge, representing him, as having completed the overthrow of the authority of Aristotle, and as having not only described the true method, but powerfully accelerated the progress of scientific discovery ‡. I shall only add one authority

* Morhofi, *Polyhistor.* tom. ii. lib. 2. cap. 1.——Morhof gives the following notice of a work published in Hungary in 1663, in which an attempt was made to explain the principles of Bacon's philosophy "Ex mente Verulamii quædam in sua universali methodo instituere voluit Johannes Bayerus, libro cui titulus: *Filum Labyrinthi, sive Lux mentium universalis, cognoscendis, expendendis et communicandis universis rebus accensa.* Verum obscurat potius Verulamii sensus omnemque philosophiam, quam ut lumen aliquod accendat."—*Polyhist.* tom. i. lib 2. cap 7 The title of Bayer's work is, partly, that of one Bacon's philosophical fragments, *(Filum Labyrinthi);* and however imperfect his work may be as an exposition of Bacon's views, it shows that his philosophical writings had early engaged the attention of the learned, even in the more obscure parts of the Continent.

† *Specimen. Controvers.* Cap. i. sect. 5. apud Pope Blount—*Censura Celeb. Author*, p. 635.

‡ Buddei, *Compendium Historiæ Philosophiæ* p. 409, 410. Edit. 1731.

authority more, that of a celebrated Dutch writer of the same day, himself an eminent improver of science in several of its branches; and who was placed in a situation, which, in a particular manner, enabled him to collect the general sentiment of Europe, upon any point connected with the history of philosophy. I here allude to Boerhaave; who, in his Discourse *de comparando certo in Physicis*, delivered before the University of Leyden, when he laid down the office of Rector in 1715, pronounced an eulogium upon the merits and services of Bacon, which I am happy to extract as a conclusion, ornament, and sanction, to the foregoing observations.—"Atque hujus quidem Physi-
"ces fortunas laudare licet ex quo magnum Verulamium sum-
"mo suo bono accepit! Virum certê ad omnia, quæ scientiâ
"humanâ comprehendi possunt, indaganda facilè principem,
"et de quo dubites utrum consilio, an exemplo, major fuerit
"in instaurandâ deformatâ Physicâ. Absque invidiâ dixero,
"quidquid incrementi cepit naturalis historia ab ineunte de-
"cimo sexto seculo in hanc usque horam, omne id acceptum
"debemus monitis et preceptis illius viri; cujus indelibilem
"memoriam grata colet orbis perpetuitas. Gratari quoque
"oportet ævo nostro, quo exire servitio sectarum licuit, sicque
"ardere puram, castamque, veritatem, ut, posthabitâ figmen-
"torum atque commentorum auctoritate, Naturam solam suas
"dotes revelantem audiamus."